are a fire menace, (3) burning the slash broadcast the first spring or fall after logging, and (4) keeping subsequent fires out of all areas once burned. These constitute the methods now followed within the national forests of Washington and Oregon to secure the reforestation of lumbered areas.—GEO. D. FULLER.

Plants of acid soils.—A method of determining the acidity or alkalinity of soils according to the hydrogen-ion concentration, and adapted to use in the field, has been developed by WHERRY.[23] He has also used the method in determining the character of the soil in which certain "oxylophytes" are usually found growing.[24] Based upon the reaction of the soil solution, the soils were classified for the purpose of this study as "superacid," "mediacid," "subacid," and "minimacid," containing respectively more than 1000 times the acid of pure water, 100 to 1000 times, 10 to 100 times, and up to 10 times, with a similar evaluation of the alkaline soils. It is then pointed out that oxylophytes may be regarded as plants of mediacid soils and calcicoles of neutral or minimalkaline soils. Tables based upon soil tests show that among the heath plants of New England, those of the Pyroloideae are most characteristic of subacid soils, while the Ericoideae and Vaccinoideae most usually reach best development upon mediacid soils, many upon subacid and minimacid soils, and a few upon neutral soils. A further list of plants upon mediacid soils includes such species as *Aspidium spinulosum*, *Lycopodium Selago*, *Clintonia borealis*, *Coptis trifolia*, *Cornus canadensis*, and *Linnaea borealis*. Another list is compiled of plants upon circumneutral soils.

Similar methods applied to the study of certain coastal areas also give most interesting results.[25] A strip of land between the pine barrens and the salt marshes of New Jersey and populated by plants characteristic of the upland woods of the northern part of the state showed a specific acidity of 10 or less, so that the soil may be classified as circumneutral. On closely associated areas are found plants which grow elsewhere in southern New Jersey only in the sand barrens. These soils, in spite of their proximity to the salt marsh, showed a specific acidity of 300, or practically the same as that of the pine barren sands themselves. The border of some salt marshes on the Massachusetts coast showed plant associations usually found inland on peat or wet sand, and again tests proved the soil to be strongly acid. The explanation of these strongly acid soils bordering the alkaline salt marsh areas is that from the sea water drawn by capillarity into the soil the bases

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[23] WHERRY, EDGAR T., Determining soil acidity and alkalinity by indicators in the field. Jour. Wash. Acad. Sci. **10**:217–223. 1920.

———, Soil acidity and a field method of its measurement. Ecology **1**:160–173. *pl. 1.* 1920.

[24] ———, Soil tests of Ericaceae and other reaction-sensitive families in northern Vermont and New Hampshire. Rhodora **22**:33–49. 1920.

[25] ———, Plant distribution around salt marshes in relation to soil acidity. Ecology **1**:42–48. 1920.

are adsorbed by the clay and humus, and the acids set free. In such areas the reaction is often found to change sharply within a few centimeters from a specific alkalinity of 30 to a specific acidity of 300. These methods and results seem likely to place the old contention of the relative importance of the physical and chemical properties of soil upon a new experimental basis, and to result in a much clearer conception of the meaning and application of the terms "oxylophytes" and "calcicoles."—GEO. D. FULLER.

Seacoast vegetation.—A description of the vegetation of the eroding seashores of Connecticut has been added by NICHOLS[26] to his other studies of the vegetation of the state previously noted in this journal.[27] He groups the important factors as those relating to submergence, such as salinity, tides, illumination, and temperature of the water, those relating to physiography, and those to atmospheric influences. The eroding seashores of the state are developed either in rock or glacial drift, and from each of these situations distinctive associations are described. The range of the studies is from the sublittoral algal associations to the forests which fringe the shores.

The depositing shores present even more diverse conditions,[28] depending principally upon the character of the soil, stony, sandy, and muddy areas, each having characteristic series of associations. The various associations are carefully described, and in the actual succession along muddy shores there is found evidence of coastal subsidence similar to that presented by GANONG, PENHALLOW, BARTLETT, and others.

Some attention is devoted to the salt marsh depressions or "pans" which appear to have various origins. Some are due to the destruction of the ordinary salt marsh vegetation by the decay of masses of plant remains swept over the surface during times of unusually high water, but others result from the partial filling and obstructing of tidal creeks and lagoons or by the building of tidal levees and the consequent ponding of water, between tides, in the lower parts of the marsh.—GEO. D. FULLER.

Crown gall of alfalfa.—WILSON[29] has described and figured in some detail the fungus causing crown gall of alfalfa. He concludes that the parasite is present in the gall in the form of a plasmodium, formed by the fusion of amoeboid cells in the host cells. He thinks that it spreads through the host tissues as a streaming mass or network of naked protoplasm, and that any mycelium observed has no connection with the gall forming organism. This plasmodial

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[26] NICHOLS, GEO. E., The vegetation of Connecticut. VI. The plant associations of eroding areas along the seacoast. Bull. Torr. Bot. Club **47**:89–117. *fig. 6.* 1920.

[27] ———, BOT. GAZ. **59**:159–160. 1915; **65**:572. 1918.

[28] ———, The vegetation of Connecticut. VII. The associations of depositing areas along the seacoast. Bull. Torr. Bot. Club **47**:511–548. *fig. 10.* 1920.

[29] BOT. GAZ. **70**:51. 1920.